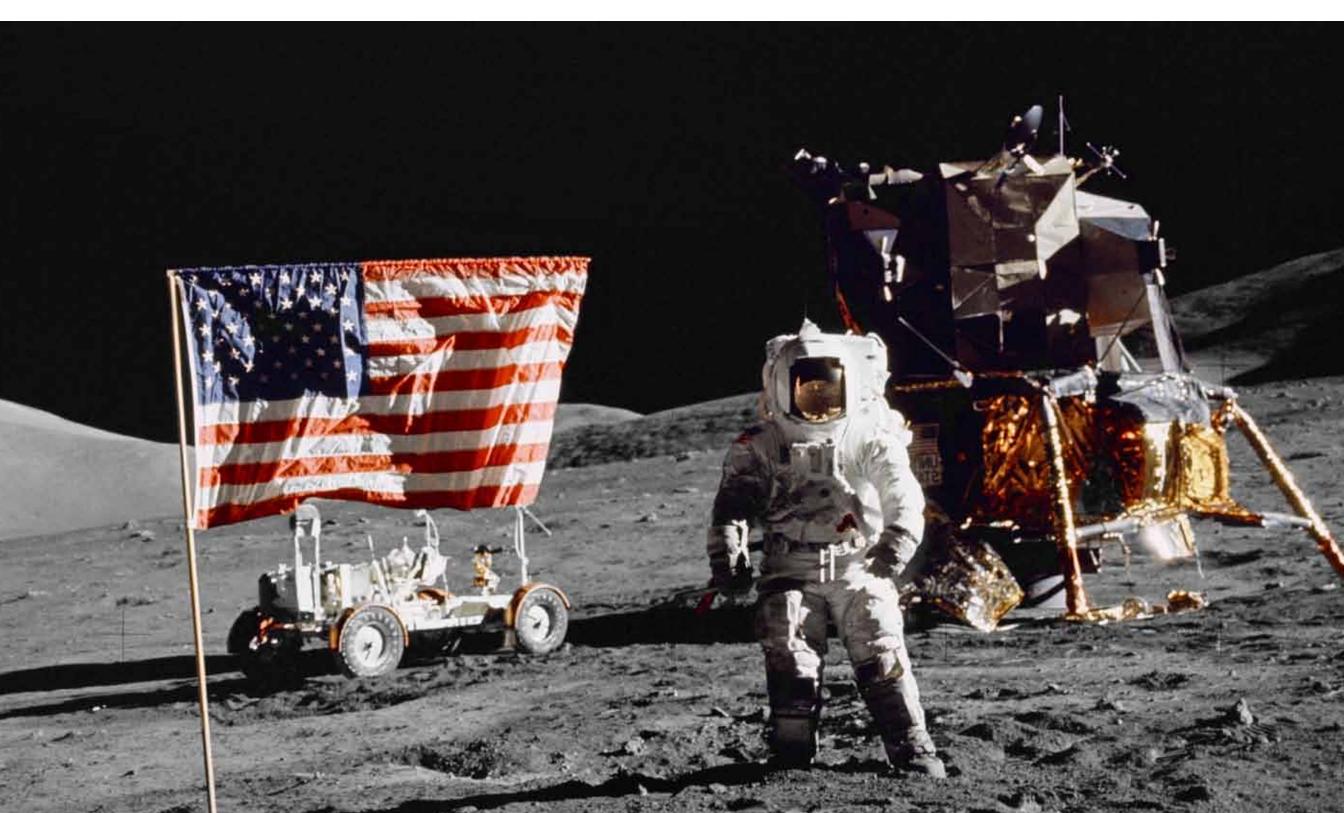


NASA Lunar Science 2010









January

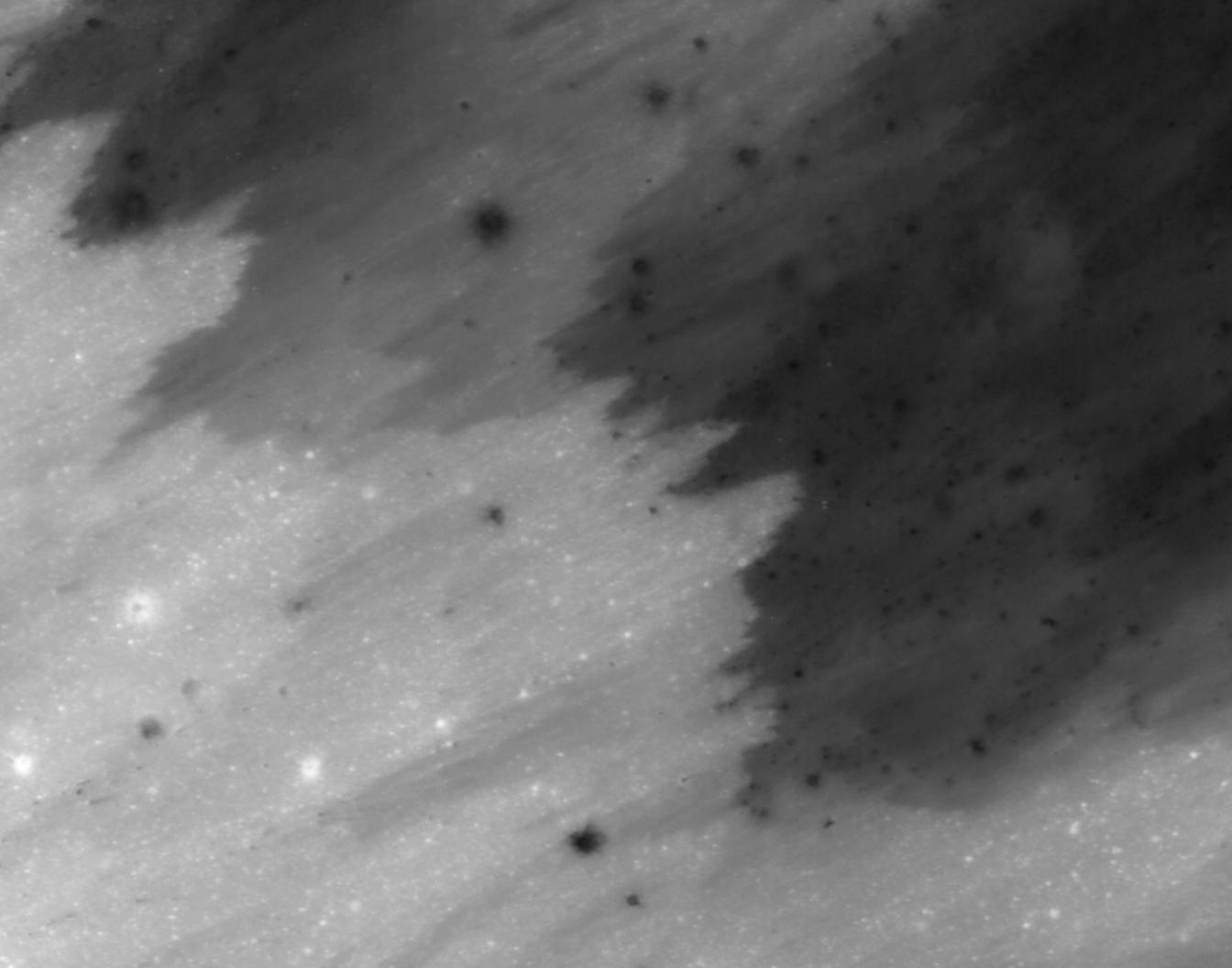
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
December 2009 S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	February 2010 S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28				New Years Day	2
3	4	5	6	7	8	9
10	11	12	13	14	O 15	16
17	18 Martin Luther King Jr.'s Birthday	19	20	21	22	O 23
24	25	26	27	28	29	• 30
31						

Astronaut Eugene A. Cernan, Apollo 17 mission commander, makes a short checkout of the Lunar Roving Vehicle during the early part of the first Apollo 17 extravehicular activity (EVA-1) at the Taurus-Littrow landing site. This view of the "stripped down" Rover is prior to load-up. This photograph was taken by Geologist-Astronaut Harrison H. Schmitt, Lunar Module pilot. The mountain in the right background is the east end of South Massif.

Inset: 16mm film frame of John Young giving the LRV a speed workout in what came to be known as the famous "Grand Prix" run. (Apollo 16, April 23, 1972)







February

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1	2	3	4	5	6
7	8	9	10	11	12	13
O 14	15 Washington's Birthday*	16	17	18	19	20
21	O 22	23	24	25	26	27
• 28	ed as "Washington's Birthg				January 2010 S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	March 2010 S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

^{*} This holiday is designated as "Washington's Birthday" in section 6103(a) of title 5 of the United States Code, which is the law that specifies holidays for Federal employees. Though other institutions such as state and local governments and private businesses may use other names, it is our policy to always refer to holidays by the names designated in the law.

The crater above looks like any ordinary bright spot in lower resolution images (100 m/pixel). However, the Lunar Reconnaissance Orbiter's (LRO) high resolution (52 cm/pixel) images reveal extraordinary detail. Here layers of ejecta stream out across the surface. Small craters churn up and expose both the fresh material within the ejecta blanket (those that appear bright) and reveal mature material from beneath it (those that appear dark). [Image credit: NASA/GSFC/Arizona State University].

Inset: LRO [top] and the Lunar Crater Observation and Sensing Satellite (LCROSS) [bottom] are encapsulated inside the Atlas V payload fairing, united after years of independent development in different facilities. (2009)







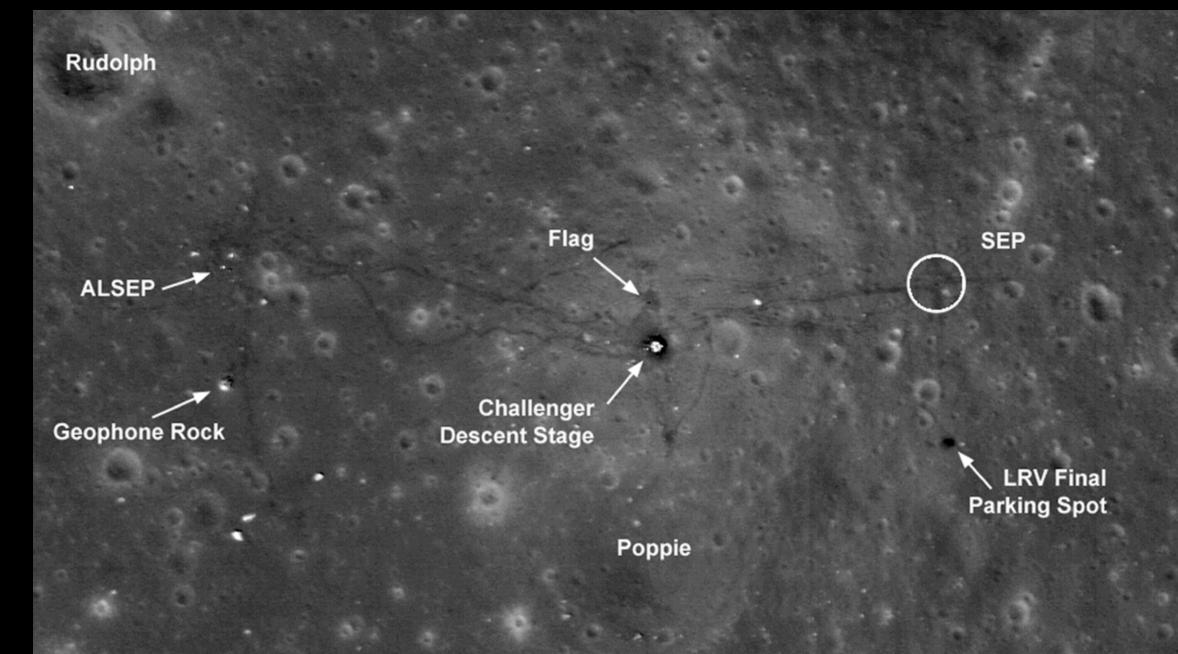
March

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1	2	3	4	5	6
	7 8	9	10	11	12	13
Daylight Savings Tim Begins	15	16	17	18	19	20 First Day of Spring
2	1 22	O 23	24	25	26	27
28	3 29	• 30	31		February 2010 S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28	April 2010 S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

During its flight, the Galileo spacecraft returned images of the Moon. The Galileo spacecraft took these images on December 7, 1992 on its way to explore the Jupiter system in 1995-97. The distinct bright ray crater at the bottom of the image is the Tycho crater. The dark areas are lava rock filled impact basins: Oceanus Procellarum (on the left), Mare Imbrium (center left), Mare Serenitatis and Mare Tranquillitatis (center), and Mare Crisium (near the right edge). This picture contains images through the Violet, 756 nm, 968 nm filters. The color is 'enhanced' in the sense that the CCD camera is sensitive to near infrared wavelengths of light beyond human vision.

LUNAR S(IEN(E

Inset: The Galileo spacecraft being prepared for launch.



April

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
March 2010 S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	May 2010 S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31			1	2	3
4	5	o 6	7	8	9	10
11	12	13	O 14	15	16	17
18	19	20	O 21	22	23	24
25	26	27	• 28	29	30	

The Lunar Reconnaissance Orbiter Camera (LROC) on board the Lunar Reconnaissance Orbiter (LRO) imaged the Apollo 17 landing site with its high resolution Narrow Angle Cameras (NACs) at 50 cm per pixel (angular resolution). Tracks are clearly visible and can be followed to the east, where astronauts Jack Schmitt and Gene Cernan set up the Surface Electrical Properties (SEP) experiment. The dark area just below the SEP experiment is where the astronauts left the rover, in a prime spot for monitoring the liftoff. [Credit: NASA/GSFC/Arizona State University]

Inset: View of the same scene looking south-southeast with geophone rock in the background-- as though you were working alongside Dr. Schmitt and Captain Cernan.







May

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1
2	3	4	5	•	7	8
9 Mother's Day	10	11	12	13	3 0 14	15
16	17	18	19	O 20	21	22
23	24	25	26	• 27	28	29
30	31 Memorial Day				April 2010 S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

This image of Aristarchus, a prominent lunar impact crater, was taken by Apollo 15 astronauts. It is considered the brightest of the large formations on the lunar surface, with an albedo nearly double that of most lunar features. The feature is bright enough to be visible to the naked eye, and is dazzling in a large telescope. It is also readily identified when most of the lunar surface is illuminated by earthshine. The crater is located at the southeastern edge of the Aristarchus plateau, an elevated area that contains a number of volcanic features, such as sinuous rilles.

Inset: The Apollo 11 Lunar Module (LM) "Eagle", in a landing configuration is photographed in lunar orbit from the Command and Service Modules (CSM) "Columbia". The long "rod-like" protrusions under the landing pods are lunar surface sensing probes. Upon contact with the lunar surface, the probes send a signal to the crew to shut down the descent engine.







June

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1	2	3	① 4	5
6	7	8	9	10	11	O 12
13	14	15	16	17	18	19
20 Father's Day	21 First Day of Summer	22	23	24	25	• 26
27	28	29	30		May 2010 S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	July 2010 S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

Apollo 10 astronauts aimed a handheld 70mm camera at the surface from lunar orbit for a series of pictures in this area in May of 1969. The terraced walls of the crater and central cone in this oblique view of International Astronomical Union (IAU) Crater 302 provide visual evidence for cratering processes. According to the lunar cataclysm hypothesis, the Earth-Moon system was severely bombarded ~4 billion years ago.

Inset: This view of the Lunar surface was taken during the Apollo 17 mission. The background gives a feel for the rugged terrain that surrounded the astronauts as they explored the valley. The mountains rise 2 kilometers above the valley floor, which is more relief than you would find at the Grand Canyon in Arizona, USA.







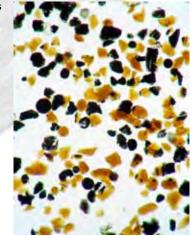


5	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
13 14 1	1 2 3 4 5 8 9 10 11 12 15 16 17 18 19 22 23 24 25 26	August 2010 S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30			1	2	3
•	4	Independence Day**	6	7	8	9	10
0	11	12	13	14	15	16	17
•	18	19	20	21	22	23	24
	25	• 26	27	28	29	30	31

^{**} July 4, 2010 (the legal public holiday for Independence Day), falls on a Sunday. For most Federal employees, Monday, July 5, will be treated as a holiday for pay and leave purposes. (See section 3(a) of Executive order 11582, February 11, 1971.)

A close-up view of an astronaut's bootprint in the lunar soil, photographed with a 70mm lunar surface camera during the Apollo 11 extravehicular activity (EVA) on the moon on July 20, 1969. The registration marks on the image were intentionally overlayed to assist with image processing and scale.

LUNAR S(IEN(E Inset: These orange glass spheres and fragments are the finest particles ever brought back from the Moon. Ranging in size from 20 to 45 microns (about 1/1000 of an inch) the particles are magnified 160 times in this photomicrograph made in the Lunar Receiving Laboratory at the Johnson Space Center. The sample is rich in titanium (8%) and iron oxide (22%), and is also unexplainably rich in zinc -- an anomaly that has scientists in a quandary.





August

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1		2	4	5	6	7
8		9 0 10	11	12	13	14
15	O 16	6 17	18	19	20	21
22	23	3 • 24	25	26	27	28
29	3(31			July 2010 S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	September 2010 S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

This view of Earth rising over the Moon's horizon was taken from the Apollo 11 spacecraft. The lunar terrain pictured is in the area of Smyth's Sea on the nearside. While astronaut Neil A. Armstrong, commander; and Edwin E. Aldrin Jr., lunar module pilot, descended in the Lunar Module (LM) "Eagle" to explore the Sea of Tranquility region of the Moon, astronaut Michael Collins remained with the Command and Service Modules (CSM) "Columbia" in lunar orbit. (16-24 July 1969)

NASA LUNAR S(IEN(E

Inset: This August 23, 1966 image of Earth was the first image of Earth as seen from the Moon. This reconstructed image was processed by the Lunar Orbiter Image Recovery Project (LOIRP) which is digitally reprocessing the original analog data from the Lunar Orbiter spacecraft. [Credit: NASA/LOIRP]





September

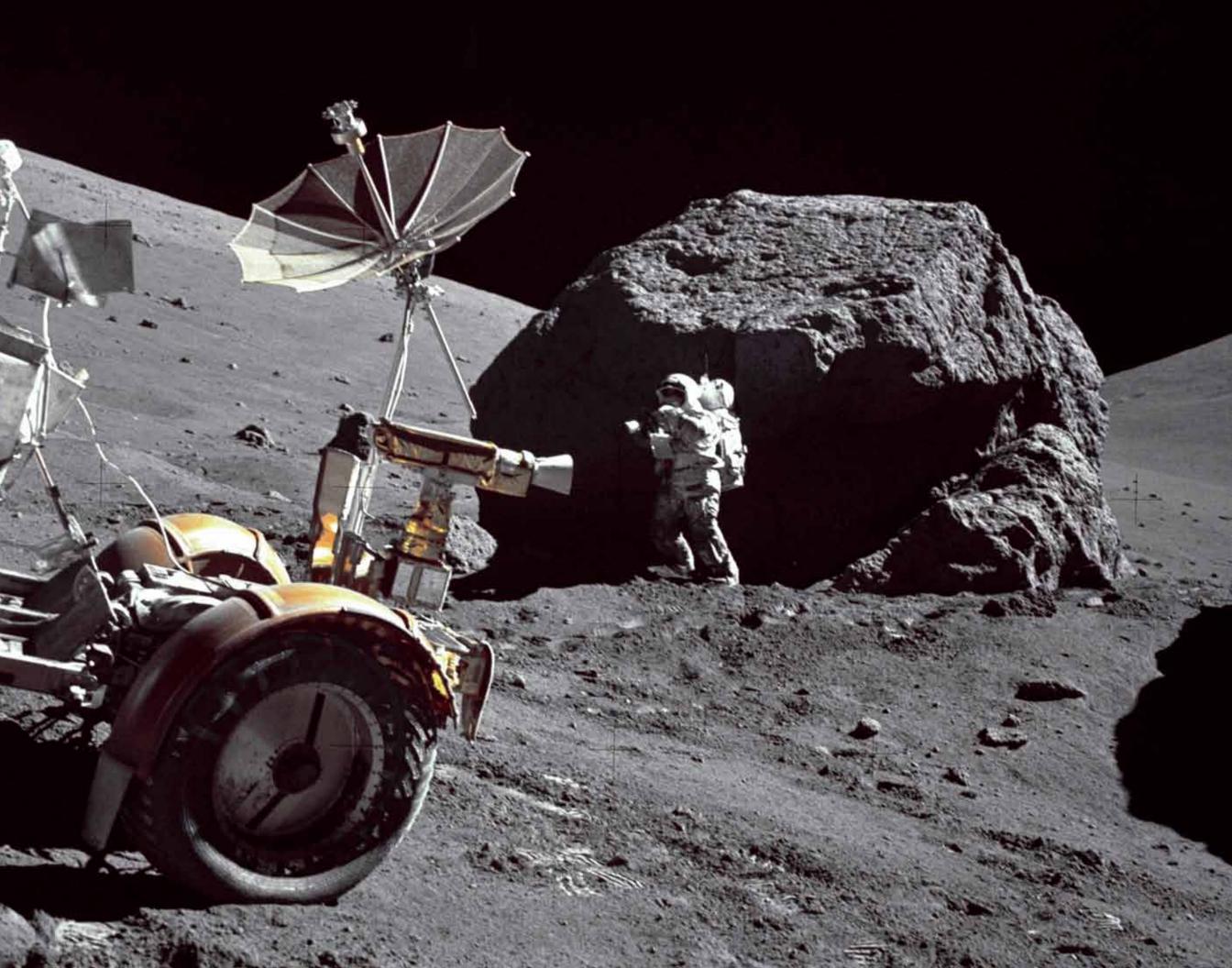
Sunday	Monday	Tuesday	V	/ednesday	Thursday	Friday	Saturday
				1	2	3	4
5	6 Labor Day	7	0	8	9	10	11
12	13	14	•	15	16	17	18
19	20	21 First Day of Autumn		22	• 23	24	25
26	27	28		29	30	August 2010 S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	October 2010 S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

The Apollo Lunar Module was the lander portion of the Apollo spacecraft built to achieve the transit from lunar orbit to the surface and back. The module was also known as the LM (often pronounced "lem," from NASA's early name for it, Lunar Excursion Module). The module was designed to carry a crew of two and rested on four landing legs. It consisted of two stages, the descent stage and the ascent stage. Above is a view from CM "Yankee Clipper" of Lunar Module "Intrepid" over craters Ptolemaeus, Herschel & LaLande. (November 19, 1969).

Inset: A picture snapped from the cockpit window during the Apollo 10 LM rendezvous over the Moon.



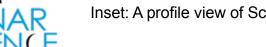




October

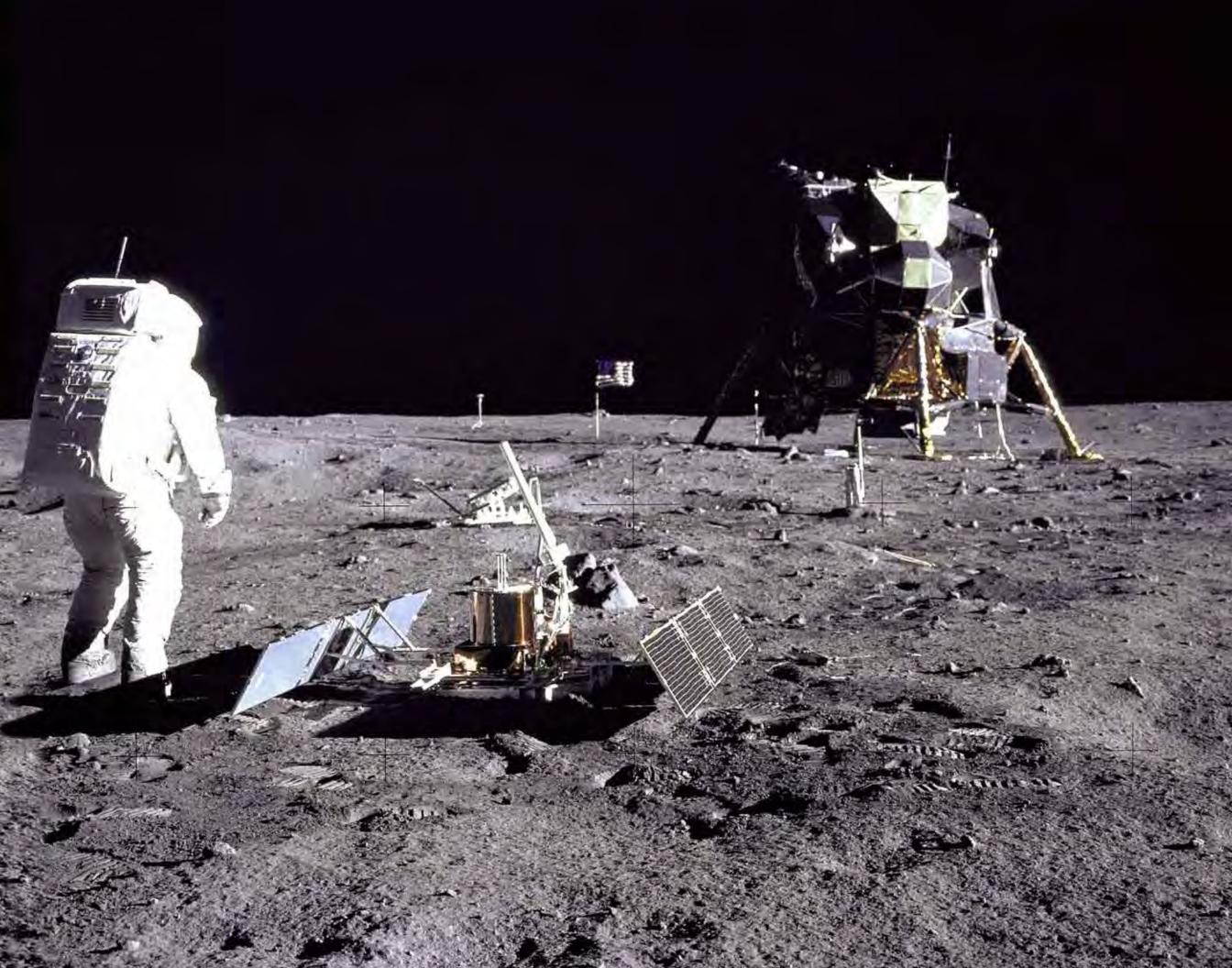
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
September 2010 S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	November 2010 S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30				0 1	2
3	4	5	6	O 7	8	9
10	11 Columbus Day	12	13	O 14	15	16
17	18	19	20	21	22	• 23
24	25	26	27	28	29	3 0
31						

Geologist-Astronaut Harrison H. Schmitt is photographed standing next to a huge, split boulder at Station 6 on the sloping base of North Massif during the third Apollo 17 extravehicular activity (EVA-3) at the Taurus-Littrow landing site. The "Rover" Lunar Roving Vehicle (LRV) is in the left foreground. Schmitt is the Apollo 17 Lunar Module pilot. This picture was taken by Commander Eugene A. Cernan.



Inset: A profile view of Schmitt investigating the same boulder during EVA-3.





November

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1	2	3	4	5	6
Daylight Savings Time	8	9	10	11 Veteran's Day	12	13
14	15	16	17	18	19	20
• 21	22	23	24	25 Thanksgiving Day	26	27
9 28	29	30			October 2010 S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	December 2010 S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

Astronaut Edwin E. Aldrin Jr., lunar module pilot, is photographed during the Apollo 11 extravehicular activity (EVA) on the moon. He has just deployed the Early Apollo Scientific Experiments Package (EASEP). This is a good view of the deployed equipment. In the foreground is the Passive Seismic Experiment Package (PSEP); beyond it is the Laser Ranging Retro-Reflector (LR-3); in the center background is the United States flag; in the left background is the black and white lunar surface television camera; in the far right background is the Lunar Module (LM).

LUNAR S(IEN(E

Inset: The Apollo 17 ascent stage blasts off from the Moon. The bottom descent stage is left behind patiently awaiting a return visit.





December

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
November 2010 S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	January 2011 S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31		1	2	3	4
O 5	6	7	8	9	10	11
12	O 13	14	15	16	17	18
19	20	• 21 First Day of Winter	22	23	24 Christmas Day***	25
26	27		29	30	31	

^{***} December 25, 2010 (the legal public holiday for Christmas Day), falls on a Saturday. For most Federal employees, Friday, December 24, will be treated as a holiday for pay and leave purposes. (See 5 U.S.C. 6103(b).)

During the Apollo 12 transearth journey astronauts caught this sight of Earth's "diamond ring" as the planet passed in front of the Sun. The ring appears incomplete at the bottom, where the night-darkened limb of the moon obscures its view. Eclipses only occur when the sun, Earth and Moon are perfectly aligned. On Earth we can see a lunar eclipse during the full moon, and we can see a solar eclipse during a new moon. But during a lunar eclipse, anyone on the Moon in the right spot would be able to see the Sun blocked by Earth.

LUNAR S(IEN(E

Inset: In 1994 the Clementine spacecraft returned this image of the Moon illuminated solely by light reflected from the Earth. The bright glow on the lunar horizon is caused by light from the solar corona; the Sun is just behind the lunar limb. Caught in this image is the planet Venus at the top of the frame.

